Section 4

I've been looking at ocean biodiversity, that's the diversity of species that live in the world's oceans. About 20 years ago biologists developed the idea of what they called 'biodiversity hotspots'. These are the (1) ……, so one example is Madagascar. These hotspots are significant because they allow us to (2) ……..…… Biologists can identify hotspots on land, fairly easily, but until recently, very little was known about (3) ……, and no one even knew if hotspots existed there.

Then a Canadian biologist called Boris Worm did some research in 2005 on data on ocean species that he got from the fishing industry. Worm located five hotspots for large ocean predators like sharks, and (4) …… The main thing he'd expected to find was that they had very high concentrations of food, but to his surprise that was only true for four of the hotspots- the (5) ……. But what he did find was that in all cases, the water at the surface of the ocean had relatively high temperatures, even when it was cool at greater depths, so this seemed to be a factor in (6) …… However, this wasn't enough on its own, because he also found that the water needed to have enough oxygen in it - so these two factors seemed necessary to support the high metabolic rate of these large fish.

A couple of years later, in 2007, a researcher called Lisa Ballance, who was working in California, also started looking for ocean hotspots, but not for fish - what she was interested in was marine mammals, things like seals. And she found three places in the oceans which were hotspots, and what these had in common was that these hotspots were (7) ……, and this seems to be the sort of place that has lots of the (8) …….

So now people who want to protect the species that are endangered need to get as much information as possible. For example, there's an international project called the Census of Marine Life. They've been surveying oceans all over the world, including the Arctic. One thing they found there which stunned other researchers was that there were large

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numbers of species which live below the ice - sometimes (9) ……

Some of these species had never been seen before. They've even found species of octopus living in these conditions. And other scientists working on the same project, but researching very different habitats on the ocean floor, have found (10) ……..…., attracted to them by the warmth and nutrients there.

However, biologists still don't know how serious the threat to their survival is for each individual species. So a body called the Global Marine Species Assessment is now creating a list of endangered species on land, so they consider things like the size of the population - how many members of one species there are in a particular place - and then they (11) ……., although this is quite difficult when you're looking at fish, because they're so mobile, and then thirdly they calculate the rate at which the decline of the species is happening.

So far only 1,500 species have been assessed, but they want to increase this figure to 20,000. For each one they assess, they use the data they collect on that species to produce a map showing its distribution. Ultimately, they will be able to use these to figure out not only where most species are located but also where they are most threatened.

So finally, what can be done to retain the diversity of species in the world's oceans? Firstly, we need (12) ……., places where marine species are protected. We have some, but not enough. In addition, to preserve species such as leatherback turtles, which live out in the high seas but have their nesting sites on the American coast, we need to create corridors for migration, so they can get from one area to another safely. As well as this, action needs to be taken to lower the

(13) …….. of endangered species. And finally, there's the problem of 'bycatch'. This refers to the catching of unwanted fish by fishing boats – they're returned to the sea, but they're often dead or dying. If these (14) …… so that only the fish wanted for consumption were caught, this problem could be overcome.

OK. So does anyone have any…

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